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World War II Logistic Principles At The Operational Level
Of War: Are They Valid Today?

by

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Major, United States Army

A paper submitted to the Faculty of the Naval War College
in partial satisfaction of the requirements of the Department of
Operations.

The contents of this paper reflect my own personal views
and are not necessarily endorsed by the Naval War College or the
Departments of the Navy or Army.

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Current doctrine for logistic support of joint operations at the operational level of war is used as a means to analyze the historic logistic lessons learned in WW II, both in the Pacific and European Theaters of Operations. The logistic lessons learned during Operations DESERT SHIELD and DESERT STORM, as well as those during WW II, revealed that the logistic principles outlined in the 1990 Joint PUB 4-0 [Test PUB], Doctrine for Logistic Support of Joint Operations: Responsiveness, Simplicity, Flexibility, Economy, Attainability, Sustainability, and Survivability were decisively threaded throughout logistical operations in WW II and the Gulf War. Logistic principles were essential to the overall operational and tactical success of the respective fighting forces. The focus of this examination will be to compare current U.S. military doctrine for logistical support in relationship to the logistic lessons learned in WW II and determine if these lessons and logistic principles are still valid for today's logistician. This analysis revealed that the logistic success in WW II was based upon the same logistic principles as outlined in current joint doctrinal manuals. These logistic principles deserve careful study by all who practice the logistical operational art of war. The lessons learned, paid for in the blood and lives of American men and women in WW II, must not be forgotten or relearned at the expense of today's soldiers, sailors, marines, or airmen.

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WORLD WAR II LOGISTIC PRINCIPLES AT THE OPERATIONAL LEVEL OF
WAR: ARE THEY VALID TODAY?

CHAPTER I

INTRODUCTION

"To the Men and Women of S.O.S. [Services of Supply] and
COMZ E.T.O. [European Theater of Operations]

I wish that it were possible to give each of you personally
a picture of what, in my opinion, you have contributed to
Allied Victory in Europe. Particularly I would like to
impress upon you individually the decisive importance of
your often obscure and always arduous tasks.

Because this personal contact with each of you is
impossible I hope that this... will serve as a token of my
regard and as a souvenir of your courageous, unfaltering
service to your nation and to the freedom of mankind.

Dwight Eisenhower 30 May, 1945."¹

The Problem. In the aftermath of Operations DESERT SHIELD
and DESERT STORM much attention has been focused on the success
and validation of US Military joint operations, and specifically
- the U.S. Army's "Airland Battle" doctrine. It was not only
operational and tactical success that ensured victory. But,
rather it was the equally important logistical contribution by
the "Logistics Warriors" that enhanced the warfighting of our
magnificent soldiers, sailors, marines, and airmen in the Gulf.

And so it was, over a half-century ago, during WW II that
the importance of logistical operations was just as dramatically

decisive. However, when studying WW II, little attention is generally given to the less glamorous logistic aspect of this major war and more to the dashing and daring of famous Generals and Admirals such as Patton, MacArthur, and Nimitz. Seldom a subject for news headlines, logistic considerations nevertheless exert a strong influence not only on strategic planning but also on the conduct of operations once the battle has begun.²

General Brehon Somervell, Commanding General Army Service Forces (equivalent to today's U.S. Army's Deputy Chief of Staff for Logistics), readily admitted in May 1944, "...we [U.S.] can't win a war with good logistics alone. But we can lose it with bad logistics." Fortunately we had "winning" logistics. Much of the credit for this victory went to the "Logistics Warriors", mentioned in General Eisenhower's personal and humble hand written letter to the men and women who comprised the Services of Supply.

TODAY'S LOGISTIC PRINCIPLES IN WW II

The logistics lessons learned during Operations DESERT SHIELD and DESERT STORM, as well as those during WW II, revealed that the logistic principles outlined in the 1990 Joint PUB 4-0 [Test PUB], Doctrine for Logistic Support of Joint Operations: *Responsiveness, Simplicity, Flexibility, Economy, Attainability, Sustainability, and Survivability* were decisively threaded throughout logistical operations in both wars, and were essential to the overall operational and tactical success of the

respective fighting forces. The focus of this examination will be to compare current U.S. military doctrine for logistical support and the relationship to the historic lessons learned in WW II and to determine if those lessons are still applicable.

Like the principles of war, the principles of logistic support provide guidance for organization, planning, management, and execution. The success of the overall logistic support effort depends on the skillful application of those principles. Identifying those principles that have priority in a specific situation is essential to establishing effective support. Simply put, logistic principles require experienced application and are as much art as science.'

COMMON SENSE: THE COMMON DENOMINATOR

The word "Logistics" is derived from the Greek adjective "logistikos" meaning "skilled in calculating." It is believed that it was Jomini in the mid-nineteenth century that first used the term "logistics" in relation to military operations in the conduct of war. However, logistics in the U.S. military vocabulary really came into existence during WW II. Before WW II, you heard about "Supply and Evacuation"--it was that part of warfare which was incidental to the main job of fighting.' The trend of the majority then, as it has been since, is to view logistics as an exact and pure science; one of merely accountants and "bean counters."

Today's U.S. Joint Professional Military Educational System

provides a strong foundation in laying out the basic fundamental principles of the duties, functions, and responsibilities of the logistician. However, there is one intangible ingredient that is required in order to be successful in support operations but is extremely difficult to articulate and instill in individuals. Colonel Charles S. D'Orsa, G-4, 5th Army, wrote in July 1945, "...one requirement that might well be added [to a logistics staff officer's training]... and which should be more emphatically stressed--the utilization of common sense. A G-4 stands or falls upon his sound application of plain, ordinary common sense to the everyday problems confronting him." It is from this perspective that logisticians, as they did in WW II, must approach their profession in today's military. As we will see, common sense coupled with joint logistic principles was a simple, but effective formula for success.

POINT OF DEPARTURE

Prior to WW II, the optimistic picture painted by our victory in WW I was misleading for the U.S. military and, in particular, for the logisticians. According to General Marshall during a post-WW I lecture at [Fort] Benning, we were fortunate not to have met the Germans in the opening stages of the war [WW I],.... because mobile warfare was a situation where chaos is normal, ... "a cloud of uncertainties, haste, rapid movements, congestion on the roads, strange terrain, lack of ammunition and supplies at the right places at the right moment, failures of

communication, terrific tests of endurance, and misunderstanding in direct proportion to the inexperience of the officers and the aggressive action of the enemy."

Unbeknown to the US military and its logisticians after WW I, they would soon see the importance of adhering to basic sustainment imperatives and fundamental joint logistic principles. In the forthcoming war, these became a countermeasure to the "friction" and "fog" in a major, modern, global war. U.S. military planners would soon realize:

"Tactical operations, to paraphrase an old maxim, had definitely become the art of the logistically feasible."

CHAPTER II

RESPONSIVENESS

Responsiveness is the right support in the right place at the right time. Among the principles of logistics, responsiveness is the keystone. All else becomes irrelevant if the logistic system cannot support the concept of operations of the supported commander.¹⁰ Responsiveness by U.S. military logisticians was prevalent throughout the theaters of operations in WW II.

According to U.S. Army Field Manual 100-5, Operations: "...when fleeting opportunities arise, the sustainment system must react rapidly."¹¹ The break out of Normandy, OPERATION COBRA, is a classic example of how the principle of "responsiveness" resulted in a decisive outcome for U.S. military forces.

As the 3d Army became operational, it rapidly fanned out to the east and west. Lines of communication became progressively elongated and the inadequacy of service units, especially truck companies, was evident. In order to realize the maximum benefit from all available truck transport, one-way through routes, called "Red Ball Routes," were developed from the beaches to the supply points of the advancing armies.¹²

A number of transportation trucking systems were emplaced to resolve this dilemma, the White Ball Express, Lions Express, ABC Express, and the most famous of all, as previously mentioned

- the Red Ball Express. The Red Ball Express was virtually a continuous, non-stop operation during the late summer and fall of 1944. On the peak day, August [1944], the tonnage hauled reached 12,342 tons. The daily average tonnage was 5,088 over 81 days during which the Red Ball Express was in operation.¹³

It is not too much to say that in the Pacific there were no really typical Quartermaster [supply] operations in combat. Though these operations were similar in that they involved amphibious campaigns, each new campaign presented details that distinguished it from others.¹⁴

Examples of such diverse logistical challenges abounded in the Pacific Theater of Operations. In many cases frontline supplies at different times were air-dropped, hand-carried, or brought up in jeeps over freshly cut trails. Frequent and sudden changes in objectives and repeated advances in timing, growing out of and leading to further unanticipated success, created some of the same kinds of problems for Pacific supply officers as did the break-through in Europe. But in the Pacific embarrassment was less acute, for reliance on water transportation permitted a degree of flexibility impossible in Europe. Ships already under way for one island could be diverted to another without serious loss, and if at times supply lines bent under the strain, they never broke. The momentum of the stepped-up offensives, once gained, never diminished.¹⁵

Clausewitz addressed this very problem in his classic work, On War, "...crisis most commonly occurs at the end of a

victorious campaign when the lines of communication have begun to be overstretched."¹⁶ The imperative of anticipation and the principle of responsiveness is the prescription needed to prevent such situations from occurring.

In today's U.S. Army and for over the past decade, it has been consistently repeated in After Action Reviews at the National Training Center at Fort Irwin, California, that "success on the battlefield is measured by the ability of the logistician to get the critical sustainment items required to generate combat power to the warfighter at the 'right' place at the 'right' time."

James Huston reiterated the same message not only for WW II logistics, but logistics throughout history:

"The ultimate aim of all logistics is to get the proper combat elements to the right place at the right time, properly equipped to fight, and with the means at hand to maintain them in the accomplishment of their missions."¹⁷

It is difficult, at best, to predict the nature, shape, and course that a battle will take; however, the logistician must anticipate the needs and requirements of the operational commander for the next 24, 48, 72 hours and beyond. The bottom line is that the logistician must be responsive to the needs of the warfighter regardless of the obstacles that may be emplaced.

CHAPTER III

SIMPLICITY

Simplicity fosters efficiency in both the planning and execution of logistic operations. Establishment of priorities and preallocation of supplies and services by the supported unit simplify logistic support operations.¹⁸

Simplicity is a principle that does not materialize or manifest in isolation or a vacuum. But as stated above, a logistician must establish priorities, plan and prepare for the execution of logistic operations in support of the warfighter.

The distances characteristic of the Pacific Theater of Operations in WW II exacerbated the logistical challenges faced by the Allied and U.S. logisticians. A relatively "simple" counter to this immense problem was a technique that has been historically grounded and is still currently used today. The technique is called rehearsals.

Rehearsals were conducted as a matter of routine in the Pacific Theater of Operations. As Seabees toiled to construct airfields, safe anchorages, jetties and fuel storage tanks, the crews of the fleet train and their 'customers' - the carriers, battleships, cruisers, destroyers and assault ships practiced the techniques of transferring fuel and all manner of munitions and stores at sea which kept the fleet free of a land base for weeks on end.¹⁹

The principle of simplicity was also a solution to the

numerous problems encountered by the logisticians in the European Theater of Operations in the fall of 1944 when adverse weather impeded their ability to transport supplies along the fragile road network, particularly in Belgium. General Eisenhower wrote in his memoir of WW II, "...To reduce our dependence on roads we brought in quantities of railway rolling stock to replace that destroyed earlier in the war. To do this expeditiously, railway engineers developed a simple scheme that was adopted with splendid results. Heavy equipment like railway cars can normally be brought into a theater only at prepared docks. Unloading is laborious because of the need for using only the heaviest kind of cranes and booms. Our engineers, however, merely laid railway tracks in the bottom of the LSTs. They then laid railway lines down to the waters's edge at the beaches of embarkation and debarkation and, by arranging flexible connections between ground tracks and those in the LSTs, simply rolled the cars in and out of the ships."²⁰

The link between operations and sustainment is critical. Effective sustainment may prevent the operational commander from reaching a culminating point in military operations before victory. The ability to immediately redirect support; to expand the scope of support responsibility while balancing current support operations without significant degradation is the essence of the principle of "simplicity."

CHAPTER IV

FLEXIBILITY

Flexibility is the ability to adapt logistic structure and procedures to changing situations, missions, and concepts of operation.²¹

The failure to integrate logistics planning with operational and tactical planning can result in a degradation of combat power and ultimately may lead to defeat. It is key that the logistician get into, and stay in the maneuver commander's decision cycle. When the operational or tactical plan is developed, the commander along with the supporting logistical staff must ensure that the overall mission can be accomplished in every phase of the operation. Flexibility must underline all else, and be built into the logistical support plan, thus allowing the operational commander the ability to conduct whatever option deemed necessary to successfully accomplish the mission. Both the tactician and the logistician must work together as a team to ensure that the operational and tactical plan is supportable, for one cannot work in isolation of the other.

On 16 December [1944] the enemy launched his surprise counteroffensive, apparently aiming to split the American forces and to destroy the vital supply installations that were built up in the Liege-Namur area, in Belgium. The ability of the [Allied] armies to cope successfully with the serious enemy threat was

largely a result of the improvement made in the logistical situation in the period just prior to the German attack. This improvement continued almost uninterruptedly throughout the offensive.²² Forward supply dumps, as well as rear area dumps, were evacuated in order to prevent them from falling into enemy hands.

3d Army's counterattack to the north in order to "slam" into the enemy's flank was an incredible feat in terms of logistics. With little warning and in less than 3 days, priority of sustainment was shifted from an eastward axis involving the establishment of an entirely new support network. Temporary depots were established from which stocks could be redirected northward. Routes were reallocated and priorities for their use ruthlessly enforced. Maintenance, supply, transportation, and service units were reallocated across corps without regard for habitual support relationships. And all this was accomplished in adverse weather and under enormous time pressure.²³

Shifting the axis of logistical support for the 3d Army, which was attacking from the south of the "bulge" area, imposed awkward, but not insurmountable, difficulties on the supply and evacuation system. The ability of the logistician to be responsive was immediate as the shift was facilitated expeditiously by promptly obtaining a number of truck companies from HQ Communications Zone. The rapidly changing tactical situation necessitated frequent interarmy transfers of service troops.²⁴ There were a significant number of risks involved in

the decision to make the dramatic shift of logistic support to north in support of the American counterattack.

The Pacific Theater of Operations also contained a number of classic examples of where the principle of flexibility was imperative. Among other unusual logistical expedients utilized by logisticians of the Luzon campaign was the use of pack animals. These once indispensable components of every army were still part of the U.S. military organization in the Philippines at the beginning of the war. This sort of improvisation was resorted to during the protracted fighting for Baguio in the spring of 1945. The mountainous terrain of that region could be traversed only over steep trails generally impassable to vehicles.²⁵

No matter how carefully commanders and planners try to anticipate events, unforeseen contingencies arise in every conflict.²⁶ Many years earlier, Napoleon had summed up the importance of logistics in relation to the operational and tactical decision making process:

"The more I see of war, the more I realize how it all depends on administration and transportation... It takes little skill or imagination to see where you would like your army to be and when, it takes much knowledge and hard work to know where you can place your forces and whether you can maintain them there. A real knowledge of supply and movement factors must be the basis of every leader's plan; only then can he know how and when to take risks with those factors, and battles are won by taking risks."²⁷

CHAPTER V

ECONOMY

Economy is the provision of support at the least cost in terms of the resources available and necessary to accomplish the mission. At some level and to some degree, resources are always limited. When prioritizing and allocating resources, the commander must continuously consider economy. This principle clearly parallels the principle of war known as economy of force."

The "Europe First" strategy in WW II implicitly made the Pacific Theater of Operation an economy of force theater. Therefore, supplies and services were established as a valuable commodities which required intense management. It was imperative to prevent widespread duplication of effort by Army and Navy agencies and the consequent waste of resources. There was a constant need for strategic and [operational] tactical co-ordination, and, above all the need to make the most efficient and economical use of available shipping where the great distances added a premium to every vessel, developed pressures for real logistical co-ordination." WW II in the Pacific presented a sharp contrast in the means of logistical support with those found in Europe. In the Pacific emphasis always had to be on water transportation and on development of port and storage facilities to make effective use of shipping. Operations thousands of miles apart, supported from one island base to

another, had to be maintained simultaneously.³⁰

Even though the logistic principle of economy was prevalent in the Pacific Theater of Operations, the vast quantities of required logistic support were never the less astounding. Mere figures become tedious and almost meaningless when recited in profusion. Yet it is interesting to note the typical support for a relatively minor invasion of the mid-Solomons (Operation *Toenails*) in Spring 1943. The logistical part of *Toenails*, Operations *Drygoods*, shipped without LST assistance, to the improved Guadalcanal and Russell Islands base, 80,000 barrels of petroleum, 50,000 tons of supplies and munitions besides the thousands of tons of equipment.³¹ There is little wonder that the Japanese defenders were seriously challenged by such an enormous and ever-expanding weight of logistic effort.

CHAPTER VI

ATTAINABILITY

Attainability is the ability to provide the minimum essential supplies and services required to begin combat operations. Seldom will resources be unlimited. The inability to attain the necessary level of support in any functional area can jeopardize success.³²

The unexpected and relatively quick tactical success achieved soon after the Allied invasion in Normandy required a deviation from the original time table established by the tactical and logistical planners months, even years earlier. The successful breakthrough by General Hodges' 1st Army west of St. Lo and the phenomenal pursuit of the German Army by General Patton's 3d Army was a tremendous tribute to the effectiveness of the American fighting machine, but placed an unexpected strain on the logistical support base. The rapidly extended lines of communication from the beachheads to the fast moving armored units was being stretched to the point of logistical bankruptcy.

One great weakness of logistics [in WW II] had been a failure of transportation for the support of the exploitation and pursuit phases of an action; for example, ...plans had not been drawn to take advantage of [Generals] Hodges' and Patton's unexpectedly rapid advance [in 1944]. The necessary hundreds of big trucks would have had to be ordered a year earlier were not

there... like the G-2, the G-4 must be a pessimist. He must stock reserves against unexpected loss; he may build stockpiles for an attack or for a prolonged defense, but the one contingency for which it is most difficult for him to prepare is the breakthrough. Nothing is more embarrassing to the logistician than success." The speed of advance was governed by the quantity of food and gasoline that could be supplied the leading elements, the halt being caused by increased enemy resistance, the need for organization for further offensive action and for improvement of capacity for logistical support. Normal logistical support during this period was not possible. Lines of communication were over taxed, and there were practically no reserves in the armies's depots."

If the Allies effort to achieve attainability in supporting the European Theater of Operations was perceived as complex, the logistical difficulties in the Burma Theater of Operations was monumental. Indeed it is hard to find any other theater of war which posed so many logistic conundrums or where supply played such a dominating part in deciding the outcome, on both sides."

The Burma Theater of Operations was indeed in jeopardy of failure due to the extreme logistical problem facing the Allies. However, through astute logistical planning and execution the Allies were able to overcome overwhelming odds and provide the minimum essential supplies and services to the "Warfighter". Attainability was clearly evident when, "...in May 1943 scarcely 5,000 tons of supplies were brought in over the Assam line of

communication; in October 1944 that figure had risen to nearly 125,000 tons."⁶

Major General Julian Thompson, author of The Life Blood of War-Logistics in Armed Conflict, indicated that in Burma, "...Logistic imperatives began to drive strategy." The final 300 mile dash by the 4th Corps in the operation to capture the port of Rangoon, "...had been supplied entirely by air, which, taking into account the support by air of two other corps, constituted the biggest air [re-supply] operation in any theater in the second world war." On no occasion was the advance delayed for lack of ammunition and stores for the battle."

These examples underscore the importance of the principle of "attainability". In each case the mission success of the operation hinged upon the this principle. Attainability and the principle of "economy" are complimentary imperatives which are not mutually exclusive. Both must be considered by the operational warfighter and the logistician alike when planning for any operation.

CHAPTER VII

SUSTAINABILITY

Sustainability is the ability to maintain logistic support throughout the operation. The principle of sustainability focuses the supporting commander's attention on the long-term objectives and requirements of the supported forces. Long-term support is the greatest challenge for the logistician, who must not only attain the minimum essential material levels to initiate combat operations (readiness) but must also sustain those operations (sustainability). The logistician must plan for and achieve logistic momentum."

British Field Marshal Montgomery stressed, "the success of administrative planning depends on the ability to foresee needs. Therefore, the commander in chief must always keep his staff posted with regard to his future intentions, in order that administrative preparations may be completed in time." Equally as important, the logistician must understand the commander's concept and intent of the operation in order to anticipate the support requirements.

On a macro level, OPERATION OVERLORD, and more precisely OPERATION NEPTUNE, illustrated how this combination worked in synchronization. The actual planning for a cross-channel invasion began immediately after Pearl Harbor. Logistical planners worked side-by-side with the strategical operational planners 24 hours a day. In the earlier days of planning, when

operational requirements were paramount, the operational planners, guided generally by the G-2 and G-4, would conceive a plan after which it then became the task of the G-4 planners to test the plan for logistic feasibility and to outline a logistical plan for its support. However, during the later phases of post-Overlord operations, when strategy was well manifest in the course of operation events and logistical limitations became more critical, a planning conference was usually opened with the question posed to the G-4 planner, "What can we do logistically?"⁴⁰

Unfortunately, there may be times when the logistician must inform the maneuver commander that, "although, it may be a brilliant operational or tactical plan, logistically, it can't be done". During 1944, an impressive illustration of how the G-4 planner cooperated with the G-3 planner in reviewing a plan presented by lower headquarters is found in a plan submitted by first Allied Airborne Army for OPERATION ARENA.⁴¹ This plan envisioned airborne assaults of 4-6 airborne divisions followed immediately by 5-6 air transported divisions into the Kassel region with an ultimate object to strike into the heart of Germany. The G-4 conducted a detailed study of all aspects of the plan and concluded that it was logistically unsound, and contained too many risks that would compromise the effectiveness of the sustainment operations. The G-4 accordingly recommended that the plan be disapproved upon which the G-3 concurred. This type of harmonious coordination was typical in the latter part

of the war.

The relationship between the operational and tactical art of warfighting and logistics was underscored by General John R. Galvin in the 1980s when he was the U.S. Army VII Corps Commander:

"He who carries the saber must also carry a wrench. The equation works the other way too: The logistician must be a tactician with a keen ability to sense the flow of the battle... Logistics units are going to be doing more fighting and maneuver units more self-help logistics than ever before... Logistics affect the tempo, the rhythm of battle. A logistics advantage tips the scales... Good tacticians have always been sensitive to their own - and the enemy's - logistics situation."⁴²

CHAPTER VIII

SURVIVABILITY

Survivability is the inherent capacity of the organization and its capabilities to prevail in the face of potential destruction. Logistic units and installations are high-value targets that must be safe guarded by both active and passive measures. The environment as well as the enemy can be a threat to survivability. Although the physical environment will most often only degrade logistics capabilities rather than destroy them, it must be considered when planning."

Consideration may or may not have been given to this principle by U.S. military planners in the October 1944 invasion of Leyte, but it did impact drastically upon the operation. This invasion force was the largest to date and consisted of 150,000 men which exceeded the number that participated in Operation Overlord in the European Theater of Operation. Despite the obvious logistic problems that are associated with the early stages of large amphibious operations, the operations at Leyte was successful. However, in the days that followed, both tactical and logistical operations became more difficult, and delays of the one delayed the other. The greatest problems resulted from the terrain and the weather."

The initial landings went according to plan, resistance proved to be light, and the beaches were receptive to logistical operations. However, the environmental elements began to take

their toll on sustainment operations as interior lines of communications were unable to be extended due to the intense jungle, swamps, and heavy rains. Many combat forces became isolated from their support elements and had to be resupplied by emergency air-drop. Eventually, after several weeks of gridlock, additional forces were brought to combine in a major offensive operation. These forces joined on the west side of the island and then drove northward. Supply lines were stretched to the breaking point, and only the dispatch of additional amphibious vessels in a support role relieved the critical supply situation."

Clearly, the battle of the "Bulge" was a matter of survival for the Allied war effort. The Allies were taken by complete surprise and had not anticipated a German counteroffensive of such a massive scale. The initial success of the reminiscent "blitzkrieg" by the Germans resulted in a number of American units being bypassed as isolated pockets with a limited amount of supplies. It wasn't long before these units were in dire need of resupply. The distinct possibility of immediate defeat or surrender was imminent. The Logisticians realized that the traditional methods of resupply would not be responsive enough to meet the critical demands of the desperate stubborn fighting Americans.

The battle of the "Bulge" was essentially the first large scale operation of emergency aerial resupply of its kind. It had become painfully obvious in the early stages of the German

counterattack that aerial resupply procedures were inadequate. Three isolated divisional units, the 106th Division, 3d Armor Division, and the 101st Airborne Division had requested immediate Aerial resupply. Poor weather canceled out the 150 aircraft designated of the 106th, and the 30 aircraft targeted for the 3d Armor missed the target on two successive days. However, the aerial resupply of the 101st at Bastogne was extremely successful: over 962 planes and 61 gliders delivered approximately 850 tons between 23 and 27 December 1944. The success of the mission to the 101st Airborne Division was, to a great extent, due to that division's knowledge of air supply procedures. Therefore, a new SOP [standard operating procedure] for emergency air supply was developed and distributed to all ground force units down to and including battalions."

There are two lessons learned from these examples of survivability. Improvisation is not a substitute for anticipation; rather it is the ability to react to the unanticipated." And Logistics must have redundant systems in the case that the primary lines of communications are interdicted or degraded by the environment.

CHAPTER IX

CONCLUSION

In the nineteenth century, Clausewitz said that, "...supply has assumed much greater importance in modern warfare."⁴⁶ Little did Clausewitz know at that time just how important and decisive supply [logistics] would be in a modern, global war. Clausewitz would have found it ironic that General Somervell had said in May 1944, "We are winning this war because our strategy and tactics are based on our logistics."⁴⁷

The Allied logisticians triumphed over difficulties by the determined application of the principles of foresight, economy, flexibility, simplicity, and co-operation. Had they not done so the undeniably greater logistic potential of the Allies over the Axis forces in terms of lift and supply, could not have been brought to bear so effectively.⁴⁸

The original focus of this examination set out to determine if the historic logistical lessons learned in WW II are still applicable today. General Carter B. Magruder, a renown U.S. Army logistician, during WW II presented a unique spin on the idea of lessons learned when he said, "There is not much new to any trained logistician in the lessons learned... There seems to me, however, to be a good deal in them that has been forgotten or disregarded in the years since World War II...".⁴⁹

Logistically, as in every other way, the second world war was by far the most testing war in history.⁵⁰ However, it could

be argued that the recent Gulf War was logistically as challenging as that of WW II. In the year between August 1990 and August 1991 - that is, before, during, and in the wake of the Gulf War - the logisticians of the U.S. Armed Forces in Southwest Asia, planned, moved, and served more than 122 million meals; pumped 1.3 billion gallons of fuel; drove almost 52 million miles in the war theater." Lieutenant General "Gus" Pagonis, the chief logistician of the Gulf War, indicated that in the first thirty days of Desert Shield the U.S. military landed and processed over 38,000 troops and 163,581 tons of equipment. This was significantly larger than the deployments that accompanied the initial phases of World War II, Korea, and Vietnam."

General H. Norman Schwarzkopf's praise and admiration of logisticians in the Gulf War is uncannily similar to General Eisenhower's letter of tribute to the logisticians of WW II which is found in the introduction of this paper. It was during General Schwarzkopf's now-famous press conference on February 27, 1991, that he specifically praised the thousands of men and women who had built and run his logistical operation, and thereby made the celebrated "end run" maneuver possible. "It was an absolutely gigantic accomplishment," General Schwarzkopf told the assembled reporters, "and I can't give credit enough to the logisticians and the transporters who were able to pull this off."

Volumes have been written in the past, and are continually

being drafted today on the strategic, operational, and tactical aspects of WW II. However, in comparison there unfortunately has been very little documented on the logistical lessons learned. These lessons are still valid and applicable for today's students of combat service support of the Airland Battlefield as they were for the logisticians of WW II. The lessons learned, paid for in the blood and lives of American men and women in WW II, must not be forgotten or relearned at the expense of today's soldiers, sailors, marines, or airmen.

"For logistics, as with strategy and tactics, the battle is the payoff."²⁴

NOTES

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